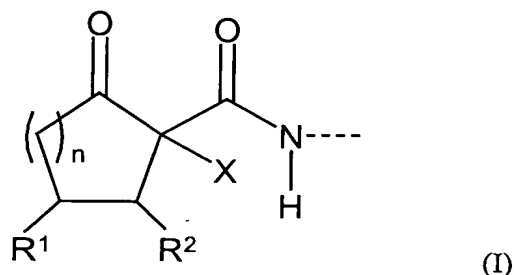


WHAT IS CLAIMED IS:

1. Hydrophilic polyurethane (PU) prepolymers comprising a polymer backbone with structural units of formula (I),



5 in which

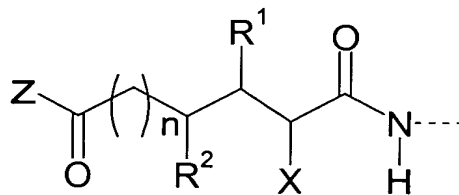
R^1 and R^2 independently of one another represent the radicals H, C_1 - C_{20} -(cyclo)alkyl, C_6 - C_{24} -aryl, C_1 - C_{20} -(cyclo)alkyl ester or amide, C_6 - C_{24} -aryl ester or amide, mixed aliphatic/aromatic radicals having 1 to 24 carbon atoms, which may also be part of a 4- to 8-membered ring, and

10 X is an electron-withdrawing group,

n is an integer from 0 to 5,

and also having structural units of polymeric polyols with a number average molecular weight range from 400 to 6000, the polymer backbone possessing ionic or potentially ionic and/or nonionically hydrophilizing groups.

2. Aqueous dispersions of polyurethane-polyurea polymers comprising the general structural unit (II),



in which

20 R^1 and R^2 independently of one another represent the radicals H,

C_1 - C_{20} -(cyclo)alkyl, C_6 - C_{24} -aryl, C_1 - C_{20} -(cyclo)alkyl ester or amide, C_6 - C_{24} -aryl ester or amide, mixed

aliphatic/aromatic radicals having 1 to 24 carbon atoms, which may also be part of a 4- to 8-membered ring,

5 X is an electron-withdrawing group,

 Z represents OH, OR^3 or NR^4R^5 , with

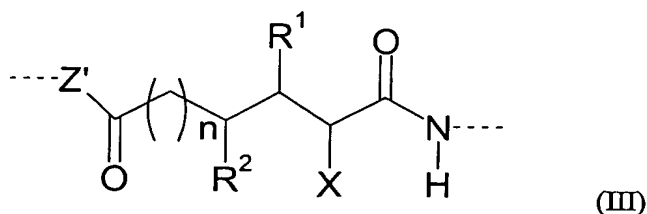
R^3 is selected from a C_1 - C_{20} -(cyclo)alkyl radical,

10 C_2 - C_{18} -alkenyl radical, C_5 - C_8 -cycloalkenyl radical, C_2 - C_{18} -alkynyl radical, C_6 - C_{24} -aryl radical, C_1 - C_{20} -(cyclo)alkyl ester and amide radical, C_6 - C_{24} -aryl ester and amide radical, and C_3 - C_{12} -heterocycloalkyl radicals, all of which can be unsubstituted or substituted by a group selected from NO_2 , amino, cyano, carboxyl, ester, keto and aldehyde groups,

15 R^4 and R^5 are independently of one another radicals selected from the group consisting of H, C_1 - C_{20} -(cyclo)alkyl, C_2 - C_{18} -alkenyl, C_5 - C_8 -cycloalkenyl, C_2 - C_{18} -alkynyl, C_6 - C_{24} -aryl, C_1 - C_{20} -(cyclo)alkyl ester and amide, C_6 - C_{24} -aryl ester and amide, C_3 - C_{12} -heterocycloalkyl radicals, all of which may be unsubstituted or substituted by

20 a group selected from NO_2 , amino, cyano, carboxyl, ester, keto and aldehyde groups, and R^4 and R^5 together with the nitrogen atom may form a C_3 - C_{12} -cycloalkyl or a C_3 - C_{13} -heterocycloalkyl radical containing O, S or N atoms,

and/or the general structural unit (III),



in which

R^1 , R^2 and X have the aforementioned meaning and

Z' represents a bridging oxygen atom or bridging secondary or tertiary nitrogen atom and

n is an integer from 0 to 5.

5 3. A process for preparing the polyurethane prepolymers according to Claim 1, characterized in comprising the step of reacting

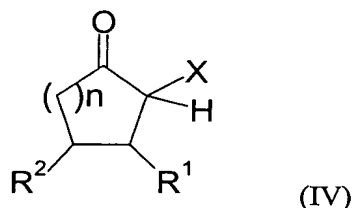
A1) at least one polyisocyanate having aliphatically, cycloaliphatically, araliphatically and/or aromatically attached isocyanate groups with

A2) polymeric polyols of the average molar weight range from 400 to 6000,

10 A3) optionally one or more polyhydric alcohols having 1 to 4 hydroxyl groups of the molecular weight range up to 400,

A4) at least one ionic and/or potentially ionic and/or nonionic hydrophilic compound having NCO reactive groups,

A5) at least one CH-acidic cyclic ketone of the general formula (IV),



in which

X is an electron-withdrawing group,

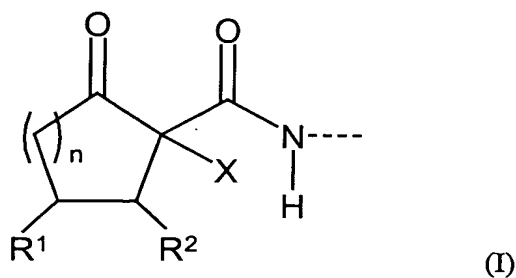
20 R^1 and R^2 independently of one another are selected from the group of radicals consisting of H, C_1 - C_{20} -(cyclo)alkyl, C_6 - C_{24} -aryl, C_1 - C_{20} -(cyclo)alkyl ester and amide, C_6 - C_{24} -aryl ester and amide, mixed aliphatic/aromatic radicals having 1 to 24 carbon atoms, which can also be part of a 4- to 8-membered ring,

n is an integer from 0 to 5, and with

A6) optionally one or more (cyclo)aliphatic monoamines or polyamines or amino alcohols having 1 to 4 amino groups of the molecular weight range up to 400,

in the presence of a catalyst and optionally in the presence of isocyanate-inert organic solvents, the molar ratio of isocyanate groups to isocyanate-reactive groups being from 0.5 to 3.

4. The process according to Claim 3, wherein the polymeric polyols (A2) are polyester-, polyether- or polycarbonate polyols.
5. The process according to Claim 4, wherein the polyether polyols are composed of less than 30 mol% ethylene oxide units.
- 10 6. A process for preparing aqueous dispersions of polyurethane-polyurea polymers according to Claim 2 comprising the steps of:
 - (a) providing an aqueous phase,
 - (b) providing at least one hydrophilic polyurethane prepolymer according to Claim 1,
 - 15 (c) partly or fully neutralizing potentially ionic groups, and
 - (d) conducting a dispersion operation, by transferring the polyurethane prepolymers of b) to the aqueous phase, or vice versa
 - (e) before, simultaneously or after step (d) chain extending with aminic components (A4) and/or (A6), wherein the polyurethane prepolymers (c) comprise a polymer backbone with structural units of the formula (I)
- 20



in which

- 5 R^1 and R^2 independently of one another represent a radical selected from the group consisting of H, C_1 - C_{20} -(cyclo)alkyl, C_6 - C_{24} -aryl, C_1 - C_{20} -(cyclo)alkyl ester and amide, C_6 - C_{24} -aryl ester and amide, mixed aliphatic/aromatic radicals having 1 to 24 carbon atoms, which may also be part of a 4- to 8-membered ring, and
- X is an electron-withdrawing group,
- n is an integer from 0 to 5,
- and also with structural units of polymeric polyols having a number average molar weight range of from 400 to 6000.
- 10 7. A process for producing coating compositions comprising adding the aqueous dispersions of polyurethane-polyurea polymers according to Claim 2 alone or in combination with curing agents and/or polymers soluble, emulsifiable or dispersible in water and in dispersed form to a coating composition.
- 15 8. Coating compositions comprising polyurethane-polyurea dispersions according to Claim 2.
9. Substrates coated with the coating compositions comprising polyurethane-polyurea dispersions according to Claim 8.
10. A method of preparing coating materials, sizes or adhesives comprising adding the polyurethane prepolymers of Claim 1 to a composition selected from coating
- 20 compositions, sizing compositions and adhesive compositions.
11. A method of preparing coating materials, sizes or adhesives comprising adding the polyurethane polyurea dispersions of Claim 2 to a composition selected from coating compositions, sizing compositions and adhesive compositions.